RAS Al KHAIMAH MUNICIPALITY (RAKM) - URBAN DEVELOPMENT SECTOR	
PERMITTING DEPARTMENT (BD)	
Specific Product Card for Concrete Facilities (Ready-mix Concrete Factories, Precast & On-Site Central Batching Units (CBU's))	RAKM-UDS-PD-RD-2001
	September, 2025

RAKM-UDS-PD-RD-2001

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Issue	Date	Clause	Amendments
00	01-06-2024	First Draft	Reviewed internally and external interested parties
01	01-10-2024	Requirements Issued	First draft approved and requirements issued
02	15-09-2025	Numbering and other changes	Numbering system and header amended to tally with the new organization structure Changes amended based on the outcome of the voluntary stage implementation as highlighted

Revision History is updated, and document issued whenever an amendment of the document is done. Amendments are highlighted in light grey.

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1. FORWARD

1.1 This specific product card for Concrete Facilities (Ready-mix Concrete Factories, Precast & CBU's) details the set requirements in order to obtain the approval from Ras Al Khaimah Municipality (RAKM) and the use of RAKM Quality Mark (RAKMQM) wherever applicable on the certified facilities. Precast Factories will be approved up to the production of concrete only.

1.2 The manufacturers shall be licensed within the jurisdiction of the emirate of Ras Al Khaimah and registered with their specific location including the number of batching plants and delivery facilities (If any) in RAKM. Special cases where delivery of concrete is not possible from Ras Al Khaimah Ready-mix manufacturers, RAKM may opt to allow other emirates' manufacturers to apply for the registration upon evaluation and approval of each case.

1.3 For CBU's, the certification of the main/permanent and licensed ready-mix or precast location is mandatory along with the operational NOC from the jurisdiction authority/developer where the CBU is erected.

1.4 The process of factory auditing involves technical assessment of the production of concrete batching plants and transit agitators (if any) for their compliance with the set specific requirements.

1.5 For the purpose of the audit, records of at least one year shall be readily available in the batching system/backup at the time of the announced/unannounced visits for the purpose of verification.

1.6 Approved manufacturers bear the right to use RAKMQM on the certified facilities or promotional material and will be subjected to announced and/or unannounced market/factory surveillances by RAKM representing team for continued compliance with the approval requirements.

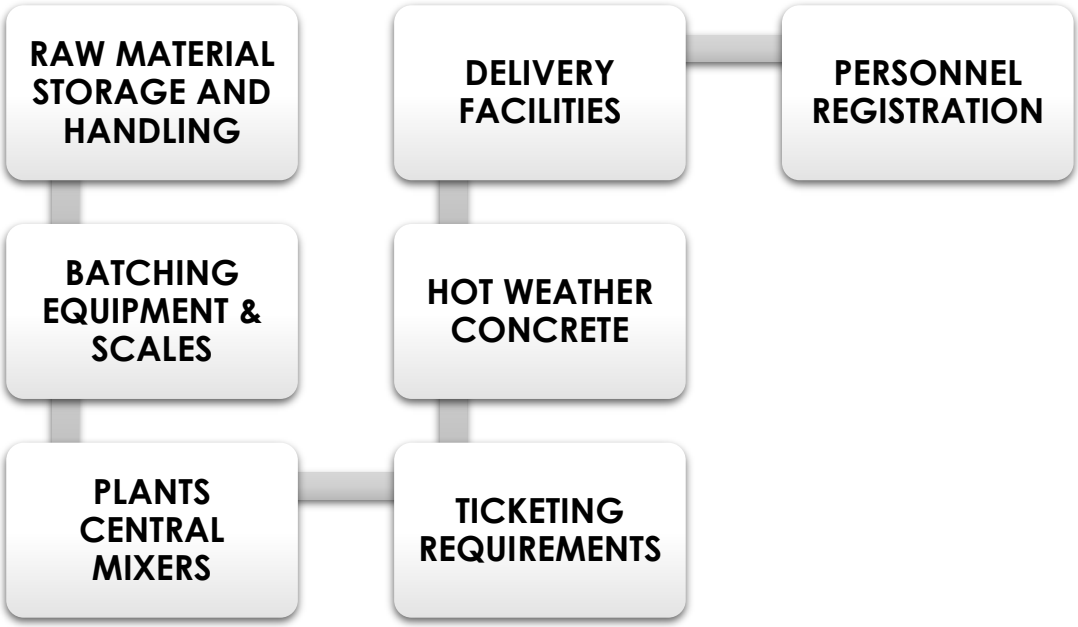
1.7 This specific product card describes the requirements for the product(s) as identified in accordance with the requirements of Type 4 Product Certification Scheme as per ISO/IEC 17067 and as reflected in RAKM-UDS-PD-GD-0002 "General Requirements for Certification Systems", taking into consideration the applicable normative references and standard specification (SS), in addition to the requirements for conformity evaluation, as stated below.

1.8 This specific product card is for facilities (Plants and Transit agitators) and not the concrete as product.

1.9 Only certified batching plants within the location will be allowed to supply concrete.

1.10 Transit agitators used to deliver concrete from batching plants to construction sites shall be registered in Ras Al Khaimah; however, RAKM may opt to allow transit agitators registered outside Ras Al Khaimah depending on the construction market needs.

2. READYMIX CONCRETE FACTORY AUDITING PROCESS DIAGRAM



3. SCOPE

3.1 This document describes the set requirements for Concrete Facilities (Ready-mix Concrete Factories, Precast & CBU's) by RAK Municipality.

3.2 The purpose of these requirements is to ensure that the Ready-Mix Concrete supplied to projects within the emirate of Ras Al Khaimah has been supplied by an audited facilities that complies with the set minimum standards requirements at the time of the audit.

3.3 Plants and transit agitators' auditing/inspection/verification shall be carried out by a qualified RAK Municipality representatives individually for each batching plant and delivery facilities in a particular location. RAKM representatives can be outsourced for certain activities as decided by RAKM.

4. TERMINOLOGY

Admixtures	Material which is added during the mixing of concrete in small quantities in relation to the mass of cement within a cubic meter of concrete to enhance certain properties of fresh and hardened concrete.
Additives	Finely added material used in concrete in order to improve certain properties or to preserve it, such as; fibers.
Aggregate	Granular mineral material intended for the use in concrete (Aggregates can be natural, artificial, or recycled from material previously used in construction). The size of the particles determines whether it is a coarse aggregate (e.g. gravel) or a fine aggregate (e.g. sand)
Batch	Quantity of fresh concrete produced in one cycle of operation of a plant mixer
Batching Plant	Plant for mixing and discharging measured quantities of concrete
Cement	A binder used for construction that sets, hardens, and adheres to other materials to bind them together through a chemical reaction with water (Hydration)
Returned Fresh Concrete	Fresh state concrete which is not yet discharged from a transit agitator when it is returned to the plant
Supplementary Cementitious Materials (SCM's)	Materials that are added to concrete mixtures for various reasons including improving durability, decreasing permeability, aiding in pumpability and finishability and improving the overall hardened properties of concrete through hydraulic or pozzolanic reactions such as (Fly Ash, Silica Fume, and Ground Granulated Blast Furnace Slag among others)
Central Batching Unit (CBU)	Temporary ready-mixed concrete batching plant located in a job site under the license of a permanent ready-mix/precast factory or the project contractor.

Concrete	A product that is formed by mixing cement, coarse and fine aggregate, and water, with or without the incorporation of admixtures and additions, which develops its properties by hydration of the cement/cementitious materials
Constituent Materials	The main components of ready-mixed concrete which are: cements and cementitious materials, aggregate, admixtures, and water.
Delivery	Handing over the process of the fresh concrete by the supplier to the purchaser
Fresh Concrete	Thoroughly mixed concrete that is still capable of being compacted by the intended method
Light-Weight Concrete	Concrete having an oven-dry density of not less than 800 kg/m³ and not more than 2000 kg/m³
Ready Mix Concrete	Concrete manufactured in batching plant and delivered to a purchaser in a fresh state
Purchaser	A person or entity for which the concrete will be produced and delivered.
Transit Agitator	Delivery vehicle used to agitate concrete and transport it to the construction site in order to keep the concrete homogeneous

5. PRIOR TO AUDITING REQUIREMENTS

Below documents/preparations need to be submitted/prepared prior to the audit along with the application:

5.1 Industrial license of the factory for the specific location.

5.2 List of available batching plants (including details on asset number, their manufacturer, capacity, and batching system)

5.3 List of all available transit agitators with their registration cards (Mulkiya – both sides) in Ras Al Khaimah (including internal asset number, drum manufacturer, and capacity)

5.4 List of staff (Technical/QC Manager, QC/Laboratory Engineers, Laboratory and Field Technicians and Checkpoint Technicians) with their qualification and competency documents such as (Education certificates, professional certificates, trainings, etc..). Residences of the staff to be submitted in the application.

5.5 Copy of the company delivery ticket and individual batch reports.

5.6 Batching scales' calibration (report and certificate) including all scales (cement, aggregates, water, Ice, admixtures, additives) and performed within one year from the application date. The same shall cover the scale's range of use, meeting the scales readability and standard weights used in the calibration.

5.7 Calibration certificates of at least 200kg standard weights to be available in each certified location.

5.8 Technical Data Sheets (TDS's) for all available admixtures and additives.

5.9 Load cells specifications (covering maximum allowable operational temperature) by the plant manufacturer.

5.10 Inspection and testing plan (ITP) aligned with the factory production control as detailed in section 7 of this document.

5.11 The platform for the purpose of transit agitators' inspection (such as checkpoint) shall be ready and safely accessible.

6. AUDITING PROCESS

DIVISION I - RAW MATERIAL STORAGE AND HANDLING		
I.1	**AGGREGATE**	
I.1.1	Separate stockpile & overhead bins are used for each size and type of aggregate, permanently and clearly labelled, or identified with permanent/durable name plates	
I.1.2	Aggregates stockpiles and overhead bins are properly shaded	
I.1.3	Aggregates are stockpiled on concrete base to avoid any intermixing with ground soil	
I.1.4	Plant procedures for unloading and/or stockpiling of aggregates are satisfactory	

I.1.5	Aggregate stockpiles & overhead bins do not show any sign of contamination or segregation	
I.1.6	Dozers are not used in the stockpiling of aggregates	
I.1.7	Aggregates are not intermixing on the tops of the separation walls or at their bases for both stockpiles and overhead bins	
I.1.8	Level of material inside the overhead bins is effectively and continuously monitored by any effective mean in order to prevent under-filled/over-filled bins	
I.2	**CEMENT & CEMENTITIOUS MATERIALS**	
I.2.1	Separate silos are used for each type of cement/cementitious materials, permanently and clearly labeled/identified by permanent/durable name plates at their blow pipe (charging pipe)	
I.2.2	Procedure for changing material in the silos is controlled with adequate records	
I.2.3	No streaking or loss of material on the external surface of the silos	
I.2.4	Stacked / Bagged cementitious materials (If Available) are not stored under direct sun and shall be lifted from the ground	
I.2.5	Slurry material (If Available) is maintained homogeneous by means of regular agitation and records are maintained	
I.2.6	Multiple compartment silos (if available) are equipped with separating wall continuous to their top	
I.3	**WATER**	
I.3.1	The supplied water is from an approved source by authority	
1.3.2	Adequate water supply of a regulated pressure is in place to prevent inaccurate measurement	
I.4	**ADMIXTURES & ADDITIVES**	

I.4.1	Admixture tanks /tots are used for each type of admixture, permanently and clearly labeled/identified by permanent/durable name plates	
I.4.2	Admixture tanks/tots are properly closed from their tops to avoid any contamination	
I.4.3	Whenever required, admixture tanks are supported with agitation means and records are maintained in case of manual agitation	
I.4.4	Procedure for changing admixtures in the tanks is controlled with adequate records	
I.4.5	Bagged admixtures/fibers (if available) are kept sealed and avoided from moisture contact within their shelf life	
DIVISION II - BATCHING EQUIPMENT & SCALES		
II.1	**WEIGHING CONTAINERS**	
II.1.1	All weighing containers are freely suspended	
II.1.2	Containers for cement/cementitious materials are fully closed and equipped with an air vent connected back to the mixer and vibrator is available	
II.1.3	All Containers' sizes are large enough for the batch to be loaded based on the central mixer capacity	
II.1.4	Containers for water whenever batched in volume are equipped with cut-off device to stop the water flow within the acceptable tolerances	
II.1.5	Containers for admixtures (dispensers) are properly labeled. *Note: Compatible admixtures prior to the concrete addition can be batched through the same dispenser (compatibility letters are required from the admixtures suppliers)*	
II.1.6	Admixture lines are free from damages and leakage	
II.2	**WEIGHING EQUIPMENT**	

<table>
<tr><td>II.2.1</td><td>Each weighing equipment shall be calibrated by an accredited calibration entity at least once every year or whenever the scale is relocated or in case of doubt</td><td></td></tr>
<tr><td>II.2.2</td><td>Batching of constituent material is done automatically</td><td></td></tr>
<tr><td>II.2.3</td><td>Each weighing equipment shall meet the accuracy limit of ±0.15% of scale capacity or ±0.4% of net applied calibration load, whichever is higher, throughout the entire range of use for the scale</td><td></td></tr>
<tr><td>II.2.4</td><td>Standard test weights used for internal verification are calibrated at least once every year, at least 200 kg of standard test weights shall be always available in the plant</td><td></td></tr>
<tr><td>II.2.5</td><td>First 10% of the scale capacity shall be always calibrated using a standard test weights, substitution weights using the same scale material can be used to cover the normal range of use for the subsequent amount</td><td></td></tr>
<tr><td>II.2.6</td><td>Weighing equipment readability shall be maximum 0.1% of the scale capacity.
<table>
<tr><th>Material</th><th>Capacity</th><th>0.1%</th><th>Display</th><th>P/F</th></tr>
<tr><td>Aggregates</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Cement</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Cementitious Materials</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Water</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Ice</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Admixture</td><td></td><td></td><td></td><td></td></tr>
</table></td><td></td></tr>
<tr><td>II.2.7</td><td>All constitute materials are batched within the acceptable average tolerances when a minimum of 10 consecutive batches with the same ingredients are randomly selected:
<table>
<tr><th>Material</th><th>Basic Tolerance from the target weight</th><th>Small Batch Tolerance from the target weight</th></tr>
</table></td><td></td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>Aggregates</td><td>Cumulative: ± 1%</td><td>± 2%</td></tr>
<tr><td></td><td colspan="2">Individual: ± 2%</td></tr>
<tr><td>Cement/ Cem. Materials</td><td>± 1%</td><td>-0 to +3%</td></tr>
<tr><td>Water/ICE</td><td colspan="2">± 1.5%</td></tr>
<tr><td>Admixture</td><td colspan="2">± 3%</td></tr>
</table>
Small batch is less than or equal to 30% of the scale capacity.
</td><td></td></tr>
<tr><td>II.2.8</td><td>When randomly verified, cements and cementitious materials are batched correctly within the tolerances reflected in II.2.7 and matching the approved concrete mix designs and consumed mixes within the same period</td><td></td></tr>
<tr><td colspan="3">DIVISION III - PLANT CENTRAL MIXERS</td></tr>
<tr><td>III.1</td><td>When assessed as per ASTM C 94, a uniformly mixed concrete is produced within the mixing time designated by the plant for each type of concrete/grade.
Note 1: Only slump test, cubes making for compressive strength, and coarse aggregates content are applicable.
Note 2: Slump test is not applicable for pre-cast plants producing only semi-dry concrete for hollow core slabs.</td><td></td></tr>
<tr><td colspan="3">DIVISION IV - TICKETING REQUIREMENTS</td></tr>
<tr><td>IV.1</td><td>Name and location of Ready-Mix concrete company</td><td></td></tr>
<tr><td>IV.2</td><td>Batching plant designated number</td><td></td></tr>
<tr><td>IV.3</td><td>Serial number of delivery ticket</td><td></td></tr>
<tr><td>IV.4</td><td>Transit agitator number and plate registration number</td><td></td></tr>
<tr><td>IV.5</td><td>Name of concrete purchaser</td><td></td></tr>
<tr><td>IV.6</td><td>Name and location of the project/ construction site</td><td></td></tr>
</table>

IV.7	Grade of concrete (Strength Class)	
IV.8	Amount of concrete in cubic meters (Batched and Re-directed)	
IV.9	Date and time when the batch was loaded	
IV.10	Types and strength class of cement & cementitious materials	
IV.11	Weights or volumes of all constitutes materials (Target vs. Actual) with deviations	
DIVISION V - HOT WEATHER CONCRETE		
V.1	The company shall have provisions to produce temperature-controlled concrete and maintain the concrete temperature below 32°C or based on the project's specifications, whichever is lower	
V.2	Aggregates overhead bins and stockpiles are permanently shaded *Note: for CBU's shading might not be permanent provided that it is properly done and will serve the purpose of avoiding direct sun effect on aggregates and sand.*	
V.3	Batching plants, cement silos, water tanks, Ice plants, admixture tanks and transit agitators are painted with light colors	
V.4	Ice plant is connected to the batching plant to produce flaked ice whenever deemed necessary	
V.5	Water chiller installed in the ready-mix location and lines connections to the mixer are insulated to maintain cold water temperature below 10°C at the mixer point	
DIVISION VI - DELIVERY FACILITIES (TRANSIT AGITATORS)		
VI.1	Transit agitators shall be properly functioning to enable the concrete to be delivered in a homogenous state	
VI.2	All surfaces of charging hoppers, discharge opening, and delivery chutes shall be smooth and free from damages. The surface shall not have concrete accumulation	
VI.3	The drum interior (blades) is clean with no significant accumulation of concrete. The blades shall not be worn out or broken	

VI.4	All surfaces in contact with concrete are free from excessive rust	
DIVISION VII – PERSONNEL REGISTRATION – All Personnel residency shall be on the Ready-mix company.		
VII.1	**Technical Manager / QC Manager** Suitably qualified Civil Engineer/Scientist/Concrete Technologist/Chartered Status with a minimum of 10 years' practical experience in relevant concrete industry, shall be registered in RAKM for every permanent location (including precast)	
VII.2	**Laboratory Supervisor** Suitably qualified Civil Engineer/Scientist/Concrete Technologist/Chartered Status with a minimum of 5 years' practical experience in relevant concrete industry, shall be registered in RAKM for every permanent location (including precast & CBU)	
VII.3	**Concrete Field Technicians** Minimum of 4 field technicians shall be registered in RAKM per each batching plant within any location	
VII.4	**Concrete Laboratory Technicians** A minimum of 2 Laboratory technicians shall be registered in RAKM for every location (including precast & CBU)	
VII.5	**Concrete Check-point Technicians** A minimum of 2 Check-point technicians shall be registered in RAKM for every permanent ready-mix location & CBU	

Note: DIVISION VI - Delivery Facilities (Transit Agitators) is applicable to transit agitators owned by transportation companies or contractors owning trucks where they will be issued Transit Agitators COC.

7. FACTORY PRODUCTION CONTROL

A. CONSTITUTE MATERIALS:

S/N	Constituent material	Inspection/Verification/Test	Purpose	Minimum Frequency
1		Verification of delivery ticket from	To verify conformance of materials with the	Every consignment / load delivery

	Cement and cementitious materials	cement/cementitious materials supplier and certificate of analysis prior to discharge	relevant standard specifications and as per the ordered details and approved source	
		Tests for physical and chemical properties	To assess compliance with standards requirements	First delivery from new source + periodic thereafter with specified frequency (At Least once every 6 months); and In case of doubt after visual inspection (for the approved cement and cementitious materials sources by RAKM, this requirement can be waived)
2	Aggregates	Verification of delivery ticket and certificate of analysis prior to discharge	To verify conformance of materials with the relevant standard specifications and as per the ordered details and approved source To compare with normal appearance with respect to grading, shape, and impurities	Every consignment / load delivery

		Test by sieve analysis	To assess compliance with grading requirements	First delivery from new source + periodic thereafter with specified frequency (At Least Monthly); and In case of doubt after visual inspection
		Test for impurities	To assess the presence of impurities	First delivery from new source + periodic thereafter with specified frequency (At Least once every 6 months); and In case of doubt after visual inspection
		Test for water absorption	To assess the effective water content of concrete	First delivery from new source + periodic thereafter with specified frequency (At Least once every 6 months); and In case of doubt after visual inspection
	Light-weight or heavy-weight aggregates	Test for loose bulk density	To measure the loose bulk density	First delivery from new source + periodic thereafter with specified frequency (At Least Monthly); and In case of doubt after visual inspection
	Admixtures	Inspection of delivery ticket, certificate of analysis, and label	To verify conformance of materials with the relevant standard	Every consignment / load delivery

		on container prior to discharge	specifications and as per the ordered details and approved source	
		Test for identification	For comparison with admixtures manufacturer's specification	First delivery from new source + periodic thereafter with specified frequency (At Least once every 6 months); and In case of doubt after visual inspection (for the approved admixture sources by RAKM, this requirement can be waived)
	Water	Chemical tests	To verify and confirm that it is free from harmful constituents	Initially and periodic thereafter with specified frequency (At Least once every 6 months) Where a new non-FEWA source is used for the first time + In case of doubt

B. FRESH AND HARDENED CONCRETE PROPERTIES:

	Properties	**Inspection/Test**	**Purpose**	**Minimum Frequency**
	Consistency	Visual inspection	For comparison with normal appearance	Every Load
		Consistency test as per standard method	To verify that the specified value is achieved	When consistence is specified.

				When testing air content. When in doubt after visual inspection.
	Density of fresh concrete	Density test as per standard method	For light-weight and heavy-weight concrete for supervision of batching and density control	Twice per week
	Cement and cementitious materials content of fresh concrete	Check the mass of cement and cementitious materials batched	To check cement content and cementitious materials and to provide data for water/cement ratio	Every Load
	Admixture content of fresh concrete	Check the mass or volume of admixture batched	To check the admixture content	Every Load
	Water/cement ratio of fresh concrete	By calculation or by testing	To verify that the specified value is achieved	Once per day
	Air content of fresh concrete where specified	Test according to standard test method	To verify that the specified value is achieved	First batch of each production day until value stabilizes where specified
	Temperature of fresh concrete	Measure the temperature	To verify that the specified value is achieved	Where temperature-controlled concrete is specified: At Least 3 times per day In case of doubt.
	Density of hardened concrete	Test as per standard test method	To verify that the specified value is achieved	Where density is specified, as frequently as compressive strength test is conducted

	Compressive strength test of molded concrete	Test as per standard test method	To verify that the specified value is achieved	As agreed with the specifier as part of conformity control Minimum every 100m³ of batched concrete

C. EQUIPMENT CONTROL

	Equipment	Inspection/Test	Purpose	Minimum Frequency
	Weighing equipment	Visual inspection	To maintain clean condition and functionality	Daily
		Calibration	To ensure that the accuracy is within the tolerance	On installation and periodically according to schedule (At Least Once Yearly). In case of doubt after visual inspection
	Equipment (Sensors) for continuous measurement of water content of fine aggregate (where deemed necessary)	Calibration	To ensure accuracy	On installation and periodically according to schedule (As recommended by the sensors manufacturers). In case of doubt after visual inspection
	Batching system and scales	Visual inspection	To ensure functionality	Daily prior to starting the batching
		Calibration by any suitable means to ascertain accuracy of actual vs. target vs. reading recorded	To ensure batching accuracy	On installation and periodically according to schedule (At Least Once Yearly). Whenever shifted/moved. In case of doubt after visual inspection

	Testing equipment	Calibration according to relevant standard requirements	To check conformity with standard	On installation and periodically according to schedule (At Least Once Yearly). In case of doubt after visual inspection
	Mixers	Visual inspection	To check functionality and wear	As per maintenance schedule

8. RAKMQM FOR PLANTS AND TRANSIT AGITATORS (Whenever Implemented)

- In addition to those requirements reflected in RAKM-UDS-PD-GD-0004 "Terms and Conditions for the Use of Ras Al Khaimah Municipality Quality Mark (RAKMQM)", below are some additional specific requirements for plants and transit agitators.
  - The client shall affix RAKMQM for Plants and Transit Agitators to identify the certified batching plant(s) within the factory by any appropriate means (sign board, banner, plate, etc.).
  - RAKMQM must be placed on all certified transit agitators using hard laminated papers in order to protect them from humidity, water, dust, etc.. and placed on the driver's side door (A4 size), with the following information:
    A. Company Name
    B. Transit Agitator Number
    C. Plate Registration Number
    D. COC Number
    E. Validity date.
  - Design of RAKMQM must be as reflected in RAKM-UDS-PD-GD-0004 "Terms and Conditions for the Use of Ras Al Khaimah Municipality Quality Mark (RAKMQM)" wherever applicable and proof shall be prepared and submitted to RAKM approval prior to be placed on the certified plants and transit agitators.

9. REFERENCE DOCUMENTS:

- ASTM C94/C94M – 20 Standard Specification for Ready Mix Concrete
- NRMCA Quality Control Manual Section 3, Twelfth Revision, February 2015, Plant Certification Check List
- BS EN 206:2013+A1:2016 Concrete. Specification, performance, production, and conformity
- ACI 305 Hot Weather Concreting
- BS EN 12390-2: 2019 Testing hardened concrete. Making and curing specimens for strength tests
- BS EN 12390-4: 2019 Testing hardened concrete. Compressive strength. Specification for testing machines
- BS 8500-1:2015+A2:2019 Concrete. Complementary British Standard to BS EN 206. Method of specifying and guidance for the specifier
- BS 8500-2:2015+A2:2019 Concrete. Complementary British Standard to BS EN 206. Specification for constituent materials and concrete